

## UNIDIRECTIONAL, MULTI-HEAD FIBER PLACEMENT

### ABSTRACT OF THE DISCLOSURE

5           An aircraft part manufacturing device for automated composite lay up includes a mandrel tool having a an interior mandrel surface that conforms to an outside mold line (OML) of a part: to be manufactured. One or more circular rings surround the mandrel and are attached to the mandrel. The circular rings rotate supported by bearings in a bearing cradle so that the mandrel rotates  
10   concentrically with the circular rings about an axis of rotation passing through the center of the circular rings. Multiple composite material delivery heads simultaneously deliver material directly to the outside mold line on the interior mandrel surface while the mandrel is rotated. A cantilever supported gantry beam supports the material delivery heads inside the interior mandrel surface. A  
15   connecting mechanism connects the material delivery heads to the gantry beam and provides motion of the material delivery heads relative to the interior mandrel surface.